OBJECTIVES

- Enhance understanding of shoulder instability
- Comprehend specific shoulder acronyms
- Understand evolving techniques for shoulder stabilization

PERSPECTIVE

- Just when you think you understand something...
  ...you don’t

CURIOSITY

- We want to know...
  ...vexing when you don’t know the answer
Motivation

- Desire to understand a concept in order to enact a positive change…
- ...staying one step ahead

Understanding

- Evolution of a compiled knowledge base pioneered by those who established the foundation
- Progress is marked by those pushing the conceptual templates to the next level
- Success is measured by actual proof, tempered by tangible failure

The Shoulder

- Delicate balance between stability and mobility
THE SHOULDER

SIMPLE
- Humeral head
- Glenoid
- Acromial arch
- Acromio-clavicular architecture

COMPLEX
- Static restraints
  - Labrum
  - Ligament
  - SGHL, MGHL, IGH
- Dynamic restraints
  - Rotator cuff
  - Concavity-compression concept
  - Motion link
  - GH 60%, ST 40%

WHEN THINGS GO RIGHT

- Coordinated interaction of mechanical components with subtle but precise neuromuscular function

WHEN THINGS GO WRONG

- Disruption of the chain leading to dysfunction and compromise
  - Acute traumatic
  - Chronic repetition
Perspective

- Learn from the pioneers by standing on their "shoulders"

Experience is something you get just after you need it...

Historical Perspective

- Edwin Smith Papyrus
  - Ancient Egypt c. 1600 BC
  - Oldest surgical document
  - Anatomic observations and examination, diagnosis, treatment and prognosis of 48 types of medical problems
  - Possibly transcribed from earlier work by Imhotep c. 3000 BC

- Ebers Papyrus
  - Oldest known anatomic document c. 1550 BC

- Confucianism
  - Chinese philosopher Confucius 551-479 BCE

- Hindu anatomists
  - Sushruta and Atreya 6th century BCE
**HISTORICAL PERSPECTIVE**

- **Hippocrates** (c. 460 BC - c. 370 BC)
- Father of Modern Medicine
- Belief that diseases were caused naturally and not by superstition or the gods

> "If in these unhallowed diseases we are moved than other diseases, not least from the fear of the divinities the other affections. Men regard their nature and cause as divine from ignorance and wonder...

— Hippocrates, On the Sacred Disease

**HISTORICAL PERSPECTIVE**

- Method for reducing shoulder dislocation

**HISTORICAL PERSPECTIVE**

- Surgical method for treatment of recurrent dislocation: cautery
  - Red hot oblong iron inserted through the axilla in order to create eschars in the inferior margin of the joint

> "For thus more especially will contraction take place, and the wide space into which the humerus used to escape will become contracted."

— Note: Bime, Thermal Capsuloraphy
Fast Forward

**Litany of Challenging Shoulder Conditions**

- **Sublime**
  - Rotator cuff
  - Impingement
  - Subacromial, subdeltoid, intra-articular
  - Tear
  - Partial, complete
  - Instability
  - Tilt, AMBI
  - Neurogenic
  - Neurologic
  - Capsular
  - Arthritic
  - GH, AC, SC joints

- **(almost) RIDICULOUS**
  - SARL
  - Shoulder Acronyms
  - Review of the Literature

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**Shoulder Acronyms**

<table>
<thead>
<tr>
<th>Acronym</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>GHLs</td>
<td>Glenohumeral ligaments</td>
</tr>
<tr>
<td>SGHL</td>
<td>Superior glenohumeral ligament</td>
</tr>
<tr>
<td>MGHL</td>
<td>Middle glenohumeral ligament</td>
</tr>
<tr>
<td>IGHL</td>
<td>Inferior glenohumeral ligament</td>
</tr>
<tr>
<td>aIGHL</td>
<td>Anterior band of IGHL</td>
</tr>
<tr>
<td>pIGHL</td>
<td>Posterior band of IGHL</td>
</tr>
<tr>
<td>SSSC</td>
<td>Superior shoulder suspensory complex</td>
</tr>
<tr>
<td>GIRD</td>
<td>Glenohumeral internal rotation deficit</td>
</tr>
<tr>
<td>SICK</td>
<td>Scapula Scapular malposition, inferior medial border prominence, coracoid pain and malposition, and dyskinesis of scapular movement</td>
</tr>
<tr>
<td>PASTA</td>
<td>Partial articular supraspinatus tendonavulsion</td>
</tr>
<tr>
<td>PABAST</td>
<td>(bony PASTA) Partial articular side bony avulsion of supraspinatus tendon</td>
</tr>
<tr>
<td>PAINT</td>
<td>Partial articular tears with intratendinous extension</td>
</tr>
<tr>
<td>TUBS</td>
<td>Traumatic unidirectional Bankart treated with surgery</td>
</tr>
<tr>
<td>AMBRI</td>
<td>Atraumatic multidirectional bilateral treated with rehabilitation or inferior capsular shift with rotator interval repair</td>
</tr>
<tr>
<td>ABER</td>
<td>Abduction with external rotation</td>
</tr>
<tr>
<td>HAGL</td>
<td>Humeral avulsion of inferior glenohumeral ligament</td>
</tr>
<tr>
<td>AHAGL</td>
<td>Anterior humeral avulsion of glenohumeral ligament</td>
</tr>
<tr>
<td>ABHAGL</td>
<td>Anterior bony humeral avulsion of glenohumeral ligament</td>
</tr>
<tr>
<td>AIGHL</td>
<td>Anterior inferior glenohumeral ligament</td>
</tr>
<tr>
<td>PHAGL</td>
<td>(reverse HAGL) Posterior humeral avulsion of glenohumeral ligament</td>
</tr>
<tr>
<td>PBHAGL</td>
<td>Posterior bony HAGL</td>
</tr>
<tr>
<td>Floating PIGHL</td>
<td>Posterior inferior glenohumeral ligament</td>
</tr>
<tr>
<td>ALPSA</td>
<td>Anterior labroligamentous periosteal sleeve avulsion</td>
</tr>
<tr>
<td>POLPSA</td>
<td>Posterior labrocapsular periosteal sleeve avulsion</td>
</tr>
<tr>
<td>GLAD</td>
<td>Glenolabral articular disruption</td>
</tr>
<tr>
<td>SLAP</td>
<td>Superior labrum anterior posterior</td>
</tr>
<tr>
<td>GLEN</td>
<td>Ganglion cyst arising from superior labrum with entrapment of inferior branch of suprascapular nerve</td>
</tr>
<tr>
<td>GLOM</td>
<td>Glenoid labrum ovoid mass</td>
</tr>
<tr>
<td>PAGCL</td>
<td>Postarthroscopic glenohumeral chondrolysis</td>
</tr>
<tr>
<td>TOTS</td>
<td>Temporary outside traction suture</td>
</tr>
<tr>
<td>PITT</td>
<td>Percutaneous intra-articular transtendon technique</td>
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<tr>
<td>DASH</td>
<td>Disabilities of the Arm, Shoulder and Hand</td>
</tr>
<tr>
<td>SPADI</td>
<td>Shoulder Pain and Disability Index</td>
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<tr>
<td>WOSI</td>
<td>Western Ontario Shoulder Instability Index</td>
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<tr>
<td>WOOS</td>
<td>Western Ontario Osteoarthritis of the Shoulder Index</td>
</tr>
<tr>
<td>WORC</td>
<td>Western Ontario Rotator Cuff Index</td>
</tr>
<tr>
<td>RC-QOL</td>
<td>Rotator Cuff Quality of Life Measure</td>
</tr>
<tr>
<td>WUSPI</td>
<td>Wheelchair User’s Shoulder Pain Index</td>
</tr>
</tbody>
</table>

**Fast Forward**

*Shoulder Acronyms. A Review of the Literature*

Michael Khazzam, M.D., Martin I. Jordanov, M.D., Charles L. Cox, M.D., Warren R. Dunn, M.D., M.P.H., and John E. Kuhn, M.D.

**CLEAR AS MUD**

Focus on a topic

- Osteoarthritis?
- Rotator cuff impingement?
- Rotator cuff tear?
- Adhesive capsulitis?
- Cuff tear arthropathy?
- Instability?

**MECHANICS OF INSTABILITY**

- Delicate Balance of Mobility and Stability
- Coordinated Interaction of Muscular Contraction Interacting with Anatomic Structures Resulting in Purposeful Action

**MODERN PERSPECTIVE**

- Bankart lesion
  - "Essential lesion"
  - Open procedures
    - Open anatomic repair
      - Sutures (Bankart)
      - Staples
      - Soft-tissue reconstruction
      - Fascia lata autograft (Gallie)
      - Muscular transposition of subscapularis (Magnusson-Stack)
      - Shortening of subscapularis and anterior capsule (Putti-Platt)
      - Osseous glenoid reconstruction
      - Bristow
      - Latarjet
      - Iliac crest autograft (Eden-Hybbinette)
      - Distal tibia allograft
      - Corrective osteotomy
      - Proximal humerus (Weber)
      - Glenoid (Meyer-Burgdorff)
      - Open capsular imbrication
    - Laterally based inferior capsular shift (Neer and Foster)
    - Medially based inferior capsular shift (Altchek)
    - Vertical capsulotomy
    - Horizontal capsulotomy
  - Arthroscopic procedures
    - Arthroscopic anatomic repair
      - Staples
      - Transosseous sutures
      - Metallic rivet
      - Bioabsorbable tack
      - Suture anchors
    - Arthroscopic capsular imbrication
      - Thermal capsulorrhaphy
      - Split and shift
      - Multi-pleated capsular plication
      - Posteroinferior capsular plication
      - Rotator interval closure
    - Arthroscopic Latarjet
    - Targeted management of Hill-Sachs lesions
      - Humeral head or femoral head allograft
      - Disimpaction
      - Partial resurfacing arthroplasty
      - Hemiarthroplasty
    - Arthroscopic remplissage

Bankart ASB. Recurrent or habitual dislocation of the shoulder joint. Br Med J 1923


**INSTABILITY**

Disruption in the mechanical chain that balances stability

- **Labrum**
  - Fibrocartilaginous rim circumferentially attached to leading edge of glenoid periphery
  - Biceps (long head) confluent at superior ("12 o'clock") position

**Instability**

- Acute
  - Traumatic
    - Dislocation
    - Subluxation

- Chronic
  - Repetitive overload
  - ? MDI

**Instability disorders & acronyms**

Sublime to the ridiculous

- Bankart (eponym)
  - Standard, Reverse, Bony
- SLAP
- PASTA
- HAGL
- ALPSA
- POLPSA
- GLAD
**ANATOMIC TEMPLATE**

**IT'S ALL ABOUT THE ANATOMY**
- ANTERIOR POSTERIOR
- CROSS-SECTIONAL

---

**READY...**

...**SET...**

...**GO**

---

**BANKART LESION**

- ANTERIOR
  - MOST COMMON LOCATION:
    - ANTERIOR/INFERIOR
Bankart Lesion

- Posterior
  - Reverse

Bankart Lesion

- Bony

Bankart Lesion

- Mechanism of injury
  - Hyper abduction and/or external rotation force
Bankart Lesion

- Surgery

SLAP Lesion

- Superior
- Labrum
- Anterior
- Posterior

- Andrews
- Snyder (SCOI)
- Rodosky (UPMC)

The Role of the Long Head of the Biceps Muscle and Superior Glenoid Labrum in Anterior Instability of the Shoulder

Mark W. Rodosky, MD
Christopher D. Harner, MD
Freddie H. Fu, MD

SLAP lesions of the shoulder


SLAP Lesion

- Types
  - I...
  - II...
  - ...Too Many
SLAP Lesion

**Mechanism of Injury**
- Forceful translation of humeral head on glenoid
  - Subluxation
  - Dislocation

SLAP Lesion

**Surgical Treatment**
- Arthroscopic suture/anchor repair

PASTA Lesion

**Partial**
**Articular**
**Supraspinatus**
**Tendon**
**Avulsion**
**PASTA Lesion**

**Mechanism of Injury**
- Traction on extended arm
- Forceful retraction of shoulder joint
- Resultant shear of rotator cuff off greater tuberosity

**Surgical Treatment**
- Suture-bridge technique
  - Span and close/advance musculotendinous gap


**HAGL Lesion**
- Humeral
- Avulsion
- Glenohumeral
- Ligament
HAGL Lesion

- Mechanism of Injury
  - Forced translation of humeral head on glenoid with resultant avulsion of ligament attachment off humerus

HAGL Lesion

- Surgical Treatment
  - Arthroscopic suture anchor repair

ALPSA Lesion

- Anterior
- Labrum
- Periosteal
- Sleeve
- Avulsion
ALPSA Lesion

**Mechanism of Injury**

- Anterior translation on glenoid avulsing tissue plane off anterior glenoid neck

ALPSA Lesion

**Surgical Treatment**

- Advance periosteal avulsion with suture anchor repair

POLPSA Lesion

- Posterior
- Labrocapsular
- Periosteal
- Sleeve
- Avulsion

POLPSA Lesion

- Mechanism of Injury
  - Forced translation of humeral head posteriorly with avulsion of capsulolabral tissue

- Surgical Treatment
  - Advance and reattach posterior capsulolabral complex
  - NB: thin veil of tissue

GLAD Lesion

- Gleno
- Labral
- Articular
- Disruption
GLAD Lesion

- Mechanism of Injury
  - Forced impaction to the shoulder with associated shift of humeral head on glenoid face

GLAD Lesion

- Surgical treatment
  - Combination
  - Labral repair
  - Chondral procedure
    - Chondroplasty
    - Microfracture

Crystal Clear
**Acronym & Location**

- Superior
- Inferior
- Anterior
- Posterior

**What's around the bend**

**Evolving Trends**

- **Instability**
  - Many variations on a theme
    - Creative solutions
    - Correct procedure for correct diagnosis
    - Balance of mobility & stability

- **Recurrent instability**
  - Primary procedure
  - Revision procedure
**SURGICAL TECHNIQUE**

**LATERJET PROCEDURE**

- **“OLD SCHOOL”**
  - Dr. Laterjet, 1954
  - Dr. Laterjet
  - Recurrent instability with glenoid bone loss
  - Coracoid transfer to anterior glenoid
  - Attached conjoint tendon acts as sling

- **“NEXT GENERATION”**
  - State of the art
  - Modified Laterjet to incorporate stability through dynamic range of motion
  - Open technique
  - Arthroscopic technique

---

**LATERJET Procedure**

**Technically Demanding**

- **Open**
  - Soft tissue dissection through open incision
  - Fixation through dynamic range of motion
  - "Block" unstable position
  - Complication risk/scar tissue potential

- **Arthroscopic**
  - Minimally invasive
  - Multiple surgical "working" portals
  - Highly skilled arthroscopic technique
  - Complication risk

---

**LATERJET Procedure**
Laterjet Procedure

**STUDIES:**

- Improved results when used for instability with bone loss
  - Burkhart, SS; De Beer JF; Barth JR; Cresswell T; Roberts C; Richards DP (2007). “Results of modified Latarjet reconstruction in patients with anteroinferior instability and significant bone loss.” Arthroscopy. 23 (10): 1033–41

- Technical variations in open and arthroscopic techniques

- Appropriate patient selection

**RESULTS:**

- Successful in contact athletes

- May now be the “go to” procedure in specific patient population
COMPLEXITY

- Identify a concept
- Define its components
- Work through the process
- Challenge your comprehension
- Understand your limits

SIMPLICITY

- Identify a concept
- Define its components
- Work through the process
- Challenge your comprehension
- Understand your limits

TYFYT